

## What is Lyme disease?

Lyme disease is caused by infection with *Borrelia burgdorferi*, a type of bacteria called a spirochete. In the eastern U.S., the infection is transmitted by the bite of the black-legged tick, *Ixodes scapularis*, commonly known as the deer tick. Lyme disease, which can affect the skin, heart, nerves, or joints, can be effectively treated with antibiotic therapy.

## Do we have Lyme disease in Vermont?

We do have Lyme disease in Vermont. For many years, only a few cases of Lyme disease were reported to the Vermont Department of Health each year. However, starting in 2005, that number started to increase steadily. The increase in reported cases has more or less continued each year. In recent years there have been several hundred reports of people with Lyme disease who were likely exposed in Vermont. Most of the reported cases have occurred in people who live in the southern half of our state, but illness has been reported from all areas of Vermont.

## What are the symptoms of Lyme disease?

The symptoms of Lyme disease can vary because different parts of the body may be affected. The skin, joints, nerves or heart may be involved.

Early symptoms of Lyme disease typically appear within 3 to 30 days after a tick bite and include one or more of the following:

- Fatigue
- Chills and fever
- Muscle and joint pain
- Headache
- Swollen lymph nodes
- Erythema migrans: **Erythema migrans** (EM) is a characteristic skin rash associated with Lyme disease. It occurs in up to 80% of people. The EM rash usually appears as an expanding rash at or near the site of the tick bite. On occasion, the rash can appear on a different part the body than where the tick bite occurred and also in multiple places at the same time. The rash usually appears within seven to 14 days. The center of the rash may clear as it spreads, giving it the appearance of a bull's-eye. The rash may be warm, but it is usually not painful or itchy.

Infections that are not recognized and treated in the early phase may spread to other parts of the body, a condition called disseminated Lyme disease. Symptoms of disseminated disease can occur days to months after the initial infection. Some of the symptoms associated with disseminated disease include:

- numbness and pain in the arms or legs
- paralysis of facial muscles, usually on one side of the face (also known as Bell's palsy)
- fever, stiff neck, and severe headaches if meningitis occurs
- abnormal heart beat (rare)

Up to 60% of people, who do not receive treatment, develop intermittent bouts of arthritis several months after infection. The arthritis is characterized by severe joint pain and swelling usually of large joints, most commonly the knee. In addition, a small percentage of untreated people develop chronic nervous system problems months to years after infection. Such problems include shooting pains, numbness or tingling in the hands and feet, and problems with concentration and short term memory.

## How is Lyme disease spread?

The spirochetes enter the body when an infected tick attaches to the skin to take a blood meal. In most cases, an infected tick must be attached for at least 36 hours in order to transmit Lyme disease. **Prompt removal of ticks can prevent infection.**

Not all types of ticks carry Lyme disease. In the eastern United States, the black-legged tick, commonly known as the deer tick, is responsible for transmitting the disease. Deer ticks are common in Vermont, but not all of them are infected with the bacteria.



From left to right: adult female, adult male, nymph, larvae. **Not to scale.** (scale: cm)

A history of a known tick bite will help the doctor to know if Lyme disease is the cause of an illness. However, many people with Lyme disease do not remember being bitten by a tick. Deer ticks are tiny and often go unnoticed. For example, nymphal deer ticks, the most common transmitters of Lyme disease, are quite small, usually about 2mm in size (see photo).

## Who is at risk of getting Lyme disease?

Deer ticks live in wooded, brushy and grassy places, including gardens. Individuals at greatest risk are those who spend time outside in areas that have a lot of ticks that are infected with the spirochete. In the Northeast, most illness occurs during the spring when the nymphal ticks are most active and people spend a lot of time outside, often with large amounts of skin exposed.

## What is the treatment for Lyme disease?

Appropriate treatment of Lyme disease with antibiotics almost always results in a full cure. While early treatment is best, most people diagnosed later in the course of illness can also be successfully treated.

## How do you prevent Lyme disease?

The best way to prevent Lyme disease is to prevent tick bites.

### While outdoors:

- As much as possible, avoid high grass and bushy areas; stay on hiking trails.
- Wear long pants and long-sleeved shirts to minimize skin exposure to ticks.
- Tuck your pants into your socks to form a barrier to tick attachment.
- Wear light-colored clothing to help see ticks on your clothing.
- Check for ticks, looking particularly for what may look like nothing more than a new freckle or speck of dirt, and remove ticks promptly.
- Use an effective tick repellent on your skin or on your clothing. There are several repellents that are effective against ticks. For an up-to-date list of EPA registered products, see <http://cfpub.epa.gov/opprpref/insect/>. Repellents should not be used on infants under 2 months of age. Read the label carefully and use according to the recommendations.
- Permethrin is an insecticide that can be applied to clothing or gear. If you spend a lot of time in tick habitat, wearing permethrin-treated clothing can be very effective at reducing your exposure to ticks

### After you come inside:

- Check your or your child's body for ticks, and remove them promptly. Pay special attention to the head, armpits, and groin area.
- Showering within a few hours of coming in from outside may also be helpful.